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Panel on Security

**Background brief prepared by the Legislative Council Secretariat
for the meeting on 2 December 2014**

Daya Bay Contingency Plan

Purpose

This paper summarises past discussions of the Panel on Security ("the Panel") on the Daya Bay Contingency Plan ("DBCP") in the event of a nuclear incident at the Daya Bay Nuclear Power Station ("DBNPS") and the DBCP Exercise held in late April 2012.

Background

Daya Bay Nuclear Power Station

2. DBNPS, which comprises Guangdong Nuclear Power Station ("GNPS") and Lingao Nuclear Power Station ("LNPS"), is located at Daya Bay about 50 km north-east of the Hong Kong city centre. GNPS and LNPS commenced operation in 1994 and 2000 respectively.

3. GNPS comprises two French-designed pressurised water reactors. Each reactor is protected by three barriers to prevent the release of radioactive material from the core. The design of the pressurised water reactors at LNPS is similar to those at GNPS. The International Atomic Energy Agency ("IAEA"), established under the auspices of the United Nations, conducted safety reviews on GNPS both before and after it commenced operation to confirm that the nuclear station would be operated in strict compliance with international safety standards.

International Nuclear Event Scale

4. The International Nuclear Event Scale ("INES") was drawn up by IAEA as an internationally recognised standard for facilitating better understanding by the public, media and the nuclear industry of the degree of significance of nuclear-related events. Under INES, international nuclear events are classified from Level 0 to Level 7. Any event that comes within the classification of INES is considered a Licensing Operational Event. Level 0 is known as "below scale" event, which implies that the event has no safety significance. Levels 1 to 3 events are regarded as "incidents", which have very little or no impact on the environment. Levels 4 to 7 are regarded as "accidents", representing various degrees of radiological impact. All incidents and accidents have to be verified, reported, analysed and rectified so as to prevent any recurrence in the future. Events falling outside the classification of INES are matters which do not have any relevance to safety. The INES classification takes into account many factors, including any degradation of safety protection measures, integrity of radiological barriers and control devices, as well as impact on the public and the environment.

Deliberations of the Panel

Review of DBCP

5. Members noted that after the Fukushima Daiichi nuclear power plant accident in Japan in March 2011, the Administration conducted a review of DBCP. The review covered various aspects, including its application, the latest international nuclear safety standards and contingency measures, the notification mechanism for nuclear incidents, radiation monitoring assessment in Hong Kong, contingency preparations, and measures and actions to be taken upon activation of the contingency plan.

6. Following the Administration's completion of its review of DBCP in late 2011, members were informed of the revised DBCP, which contained a series of enhancement measures covering areas of emergency response structure, radiation monitoring, notification arrangements, accident consequence assessment, boundary control measures on inbound travellers and goods, plume exposure pathway countermeasures, ingestion pathway countermeasures for food and water, enhancement in public information dissemination and public education.

7. Noting that the Japanese authorities had expanded full countermeasures from areas within a zone of 20 km radius around the Fukushima Daiichi nuclear power station to those within a zone of 30 km radius from the nuclear power station, members were concerned whether the Administration would consider

adopting similar measures in Hong Kong and enlarging the area from within a zone of 20 km radius to those within a zone of 30 km radius from Daya Bay.

8. Members were informed that a range of 20 km from the nuclear power stations at Daya Bay was to be maintained under the revised DBCP as Emergency Planning Zone ("EPZ") 1, which was in line with the prevailing IAEA standards and the best practices of advanced countries, with possible evacuation, sheltering or the use of thyroid blocking agents as countermeasures. Ping Chau was the only land mass in Hong Kong within EPZ1.

9. Information was sought on the ingestion pathway countermeasures for food and water in case of a nuclear emergency. According to the Administration, a range of 85 km covering the whole territory of Hong Kong was set as EPZ2 with controls over food, live food animals and water imported from areas close to DBNPS, locally produced or supplied. Agreement had been made with the Mainland authorities to implement protective measures for export of food produced within 50 km of DBNPS to Hong Kong so as to ensure food safety. Regarding food supply, members were advised that while the Mainland was the most important food source for Hong Kong, especially the fresh food items, only a small proportion of food imported from places in the vicinity of DBNPS. Members were assured that in the unlikely event of a nuclear incident, there would be sufficient and stable supply of live and fresh food to Hong Kong.

10. Noting that the source of water in Hong Kong mainly came from Dongjiang (ranging from 70% to 80%) and rainwater collected from catchments in Hong Kong (ranging from 20% to 30%), members had expressed concern about the supply of water to Hong Kong and the possible contamination of all sources of water in the event of a nuclear accident at DBNPS. Concern was raised over the possibility that in case of raining, the wind would carry the plume over the Shenzhen Reservoir (through which water from Dongjiang would be delivered to Hong Kong), the High Island Reservoir and the Plover Cove Reservoir and the depositing of the radioactive substances in these reservoirs would result in contamination of all sources of water supply to Hong Kong.

11. According to the Administration, given the different geographic locations of Dongjiang, the High Island Reservoir and the Plover Cove Reservoir and the specific requirements of the meteorological conditions, it would be impossible for these main sources of water to be contaminated at the same time. The radiation level of Dongjiang water was in effect closely monitored by the relevant Mainland authorities. According to the Consultancy Report of United Kingdom Atomic Energy Authority, the effects on water supply to Hong Kong would be minimal even in the event of a serious nuclear accident at DBNPS.

DBCP Exercise 2012

12. Members noted that the DBCP exercise, codenamed "Exercise Checkerboard", was conducted on two consecutive days from 26 to 27 April 2012 to test out the revised DBCP. It was the largest exercise that the Government had ever held, mobilising over 3 200 officers from more than 30 government bureaux and departments. In addition, the exercise also involved public participation, with over 2 000 citizens and volunteers joining as players. The Hong Kong Nuclear Investment Limited was also invited to participate in the exercise.

13. Members were informed that Exercise Checkerboard was primarily a command post exercise with field deployment by government departments. Once the revised DBCP was activated, responsible bureaux, departments and public organisations would act and interact in response to the simulated accident, focusing on their coordination and cooperation. The exercise scenario postulated that there was a severe nuclear accident at GNPS, including events under different themes at different time slots that would test the judgement and the ability to make use of knowledge and training outcomes to jointly respond to the emergency situations.

14. Information was also sought on whether concerns about attack from terrorists had been taken into consideration in working out the revised DBCP in the light of the serious consequence of damage so caused. According to the Administration, large-scale anti-terrorist attack exercises involving the use of bioweapons had been conducted before the 2008 Hong Kong Olympic Equestrian Events and Hong Kong 2009 East Asian Games. The exercise would be conducted again at an appropriate time to ensure the Government's capabilities and preparedness for terrorist attack.

15. Regarding the boundary control monitoring and screening of inbound vehicles and travellers in the event of a nuclear accident at DBNPS, members had sought information on whether there was any collaboration between Hong Kong and the relevant Mainland authorities in this aspect. Members were informed that according to the World Health Organization, the contamination caused by radiation was different from that caused by infectious disease. It was not contagious and would reduce over time. According to the views of nuclear experts, a radiation contaminated person would not constitute any harm to other people. Therefore, it would not be necessary to implement compulsory boundary control measures to test the radiation level of goods and people unless advised by the World Health Organization. However, having regard to the concern about health risk, Monitoring Centres would be set up to provide quick radiation scanning service in the revised DBCP, if necessary. Specific measures would be introduced if the volume of the flow of people and goods was great. Regarding boundary control, a notification mechanism was

in place to maintain the communication with the relevant Mainland authorities. Should there be a nuclear accident, close liaison would be maintained and corresponding arrangements would be made in consideration of the circumstances.

16. There was a suggestion that close collaboration on immigration control between Hong Kong and the relevant Mainland authorities should be included in future exercises. According to the Administration, it had a long-term plan to conduct a large-scale DBCP exercise involving the participation of the relevant emergency response centre in the Guangdong Province and DBNPS so as to identify areas for improvement.

17. Members noted that the Administration had maintained liaison with the National Nuclear Safety Administration and made reference to the information provided by the National Nuclear Safety Administration in the Exercise Checkerboard. Improvements would be made to the revised DBCP where necessary.

18. Members noted that the next large-scale exercise would be conducted within three to five years following the review of the exercise for the revised DBCP, and reference would be made to the guidelines provided by IAEA.

Latest development

19. The Administration will update the Panel on the contingency plan for nuclear incidents near Hong Kong at the Panel meeting on 2 December 2014.

Relevant papers

20. A list of the relevant papers available on the Legislative Council website is in the **Appendix**.

**Relevant papers on
Daya Bay Contingency Plan**

Committee	Date of meeting	Paper
Legislative Council	27.10.1999	Official Record of Proceedings (Question 12)
	30.6.2010	Official Record of Proceedings (Question 1)
	7.7.2010	Official Record of Proceedings (Question 9)
Panel on Security	16.11.2010 (Item I)	Agenda Minutes
Legislative Council	16.3.2011	Official Record of Proceedings (Urgent Questions 1, 2 and 3)
Panel on Security	19.3.2011 (Item I)	Agenda Minutes
Legislative Council	30.3.2011	Motion on "Concern about the impact of the earthquake in Japan on Hong Kong"
Panel on Security	7.6.2011 (Item V)	Agenda Minutes
	6.12.2011 (Item VI)	Agenda Minutes
	3.4.2012 (Item V)	Agenda Minutes
	4.7.2012 (Item V)	Agenda Minutes